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# TRANSMITTAL FORM

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| Art Unit | 2186 |
| Examiner Name | Unassigned |
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## ENCLOSURES *(Check all that apply)*

- ☐ Fee Transmittal Form
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## SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

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| Firm Name | Townsend and Townsend and Crew LLP | | |
| Signature |  | | |
| Printed name | Chun-Pok Leung | | |
| Date | August 23, 2005 | Reg. No. | 41,405 |

## CERTIFICATE OF TRANSMISSION/MAILING

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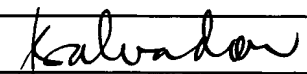
| Signature |  | | |
| Typed or printed name | Joy Salvador | Date | August 23, 2005 |

PATENT
Attorney Docket No.: 16869K-102000US
Client Ref. No.: 633/SM

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:

NOBORU FURUUMI *et al.*

Application No.: 10/722,781

Filed: November 25, 2003

For: INFORMATION PROCESSING SYSTEM, STORAGE SYSTEM, STORAGE DEVICE CONTROL APPARATUS AND PROGRAM

Customer No.: 20350

Examiner: Unassigned

Technology Center/Art Unit: 2186

Confirmation No.: 7247

**RENEWED PETITION TO MAKE SPECIAL FOR NEW APPLICATION UNDER M.P.E.P. § 708.02, VIII & 37 C.F.R. § 1.102(d)**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Decision dated June 24, 2005 dismissing the original petition to make special, Applicants respectfully submit a renewed petition to make special the above-identified application under MPEP § 708.02, VIII & 37 C.F.R. § 1.102(d). The application has not received any examination by an Examiner.

(a) The Commissioner has previously been authorized to charge the petition fee of $130 under 37 C.F.R. § 1.17(i) and any other fees associated with this paper to Deposit Account 20-1430.

(b) All the claims are believed to be directed to a single invention. If the Office determines that all the claims presented are not obviously directed to a single invention, then Applicants will make an election without traverse as a prerequisite to the grant of special status.

(c) Pre-examination searches were made of U.S. issued patents, including a classification search and a computer database search. The searches were performed on or around October 11, 2004, and were conducted by a professional search firm, Kramer & Amado, P.C. The classification search covered Class 707 (subclasses 200 and 201), Class 711 (subclass 162), and Class 710 (subclasses 300 and 305) for the U.S. and foreign subclasses identified above. The computer database search was conducted on the USPTO systems EAST and WEST. The inventors further provided a reference considered most closely related to the subject matter of the present application (see reference #8 below), which was cited in the Information Disclosure Statements filed on May 11, 2004.

(d) The following references, copies of which were previously submitted, are deemed most closely related to the subject matter encompassed by the claims:

(1) U.S. Patent No. 3,795,901;

(2) U.S. Patent No. 5,832,510;

(3) U.S. Patent No. 6,681,303 B1;

(4) U.S. Patent Publication No. 2003/0033463 A1;

(5) U.S. Patent Publication No. 2003/0041207 A1;

(6) U.S. Patent Publication No. 2003/0182526 A1;

(7) U.S. Patent Publication No. 2004/0107246 A1;and

(8) Japanese Patent Publication No. 2001-306414.

(e) Set forth below is a detailed discussion of references which points out with particularity how the claimed subject matter is distinguishable over the references.

A. Claimed Embodiments of the Present Invention

The claimed embodiments relate to an information processing system and a storage system involving remote copying and data recovery.

The search was directed towards an information processing system, storage system, storage device control apparatus and program. With reference to the disclosure, FIG.

1 illustrates a storage device controller configuration including an information processing apparatus A 100a that receives an order from an operation terminal connected with a LAN 300, and executing a predetermined program. See pg. 5, ln. 19-26. An input-output control unit A 220a is also provided with another communication port A 221a which is connected with a remote copying link 400. See pg. 7, ln. 1-5. The input/output control unit A 220a transmits a duplicate of the data through the remote copying link 400 to an input/output control unit B 220b provided to the storage apparatus B 200b. See pg. 7, ln. 6-17. Then, input/output control unit B 220b writes the data to a storage volume B (R-VOL (Remote Volume)) 210b. Id. It is further possible to adapt such that the data is doubly written in the storage apparatus A 200a and the storage apparatus B 200b. See pg. 7, ln. 18-25. Communication through the remote copying link 400 is carried out according to a predetermined communication protocol. See pg. 9, ln. 20-24. FIG. 2 illustrates a layer configuration for a fiber channel protocol that enables simultaneous bi-directional communication. See pg. 10, ln. 4-24. It is noted that in FC-AL protocol systems, simultaneous data transfer is not permitted. Id. FIG. 3 illustrates a configuration of a data frame and FIG. 4 illustrates a configuration of a data frame header. FIG. 5 illustrates data communication in a storage device controller system. See pg. 12, ln. 4-16. Connection between storage apparatus A 200a and storage apparatus B 200b through remote copying link 400 is carried out by setting up a logical path 410 for each of the CU images 230. See pg. 12, ln., 17-24. Thus, data transfer between storage apparatus A 200a and the storage apparatus B 200b is carried out by setting up logical paths in advance. See pg. 13, ln. 5-7. FIG. 6 illustrates path management table 800, which is an aggregation of MCU unit path management table 810 provided to each of the CU images 230. See pg. 13, ln. 17-20. FIG. 7 illustrates MCU unit path management table 810 that is an aggregation of RCU valid flag information 811 and n+1 RCU unit path management tables 810. See pg. 13, ln. 21-25. FIG. 9 illustrates path unit management table 830 that includes path direction information 834 in bitmap form. See pg. 14, ln. 17-26. Using the tables, the logic path 410 is formed on the remote copying link 400 to thereby set up a path in an opposite direction when a main site has recovered from failure. See pg. 15, ln. 18-26.

Independent claim 1 recites an information processing system including a first information processing apparatus having a first communication port for transmitting and

receiving data; a second information processing apparatus having a second communication port for transmitting and receiving data; and a communicating portion for executing bi-directional communication between the first communication port and the second communication port. The information processing system comprises a utilizing portion for utilizing the communicating portion, for communication in a direction for which a first application program run on the first information processing apparatus sets the first communication port and the second communication port respectively as the sender and the destination of data; and another utilizing portion for utilizing the communicating portion, for communication in a direction for which a second application program run on the second information processing apparatus sets the second communication port and the first communication port respectively as the sender and the destination of data.

Independent claim 2 recites a storage system including a first storage device controller connected to a first storage device; a second storage device controller connected to a second storage device; a first communication port that the first storage device controller has for transmission and reception of data; a second communication port that the second storage device controller has for transmission and reception of data; a communicating portion for carrying out bi-directional communication between the first communication port and the second communication port, and being configured to write the data to be written to the first storage device also to the second storage device; a utilizing portion for utilizing the communicating portion, for communication in a direction for which a first application program run on the first information processing apparatus sets the first communication port and the second communication port respectively as the sender and the destination of data; and another utilizing portion for utilizing the communicating portion, for communication in a direction for which a second application program run on the second information processing apparatus sets the second communication port and the first communication port respectively as the sender and the destination of data.

Independent claim 5 recites a first information processing apparatus in an information processing system including the first information processing apparatus having a first communication port for transmitting and receiving data; second communication port for transmitting and receiving data; and a communicating portion for executing bi-directional communication between the first communication port and the second communication port.

The first information processing apparatus comprises a utilizing portion for utilizing the communicating portion, for communication in a direction for which an application program run on the first information processing apparatus sets the first communication port and the second communication port respectively as the sender and the destination of data.

Independent claim 6 recites a second information processing apparatus in an information processing system including a first information processing apparatus having a first communication port for transmitting and receiving data; the second information processing apparatus having a second communication port for transmitting and receiving data; and a communicating portion for executing bi-directional communication between the first communication port and the second communication port. The second information processing apparatus comprises a utilizing portion for utilizing the communicating portion, for communication in a direction for which an application program run on the second information processing apparatus sets the second communication port and the first communication port respectively as the sender and the destination of data.

Independent claim 7 recites a first storage device controller in a storage system including the first storage device controller connected to a first storage device; a second storage device controller connected to a second storage device; a first communication port that the first storage device controller has for transmission and reception of data; a second communication port that the second storage device controller has for transmission and reception of data; and a communicating portion for carrying out bi-directional communication between the first communication port and the second communication port, and being configured to write the data to be written to the first storage device also to the second storage device. The first storage device controller comprises a utilizing portion for utilizing the communicating portion, for communication in a direction for which an application program run on the first storage device controller sets the first communication port and the second communication port respectively as the sender and the destination of data.

Independent claim 10 recites a second storage device controller in a storage system including a first storage device controller connected to a first storage device; the second storage device controller connected to a second storage device; a first communication port that the first storage device controller has for transmission and reception of data; a

second communication port that the second storage device controller has for transmission and reception of data; and a communicating portion for carrying out bi-directional communication between the first communication port and the second communication port, and being configured to write the data to be written to the first storage device also to the second storage device. The second storage device controller comprises a utilizing portion for utilizing the communicating portion, for communication in a direction for which an application program run on the second storage device controller sets the first communication port and the second communication port respectively as the sender and the destination of data.

Independent claim 13 recites a computer-readable medium containing a computer program software for causing an information processing system including a first information processing apparatus having a first communication port for transmitting and receiving data; a second information processing apparatus having a second communication port for transmitting and receiving data; and a communicating portion for executing bi-directional communication between the first communication port and the second communication port, to execute the steps of: utilizing the communicating portion, for communication in a direction for which the first communication port and the second communication port are respectively set as the sender and the destination of data; and utilizing the communicating portion, for communication in a direction for which the second communication port and the first communication port are respectively set as the sender and the destination of data.

Independent claim 14 recites a computer-readable medium containing a computer program software for causing a storage system including a first storage device controller connected to a first storage device; a second storage device controller connected to a second storage device; a first communication port that the first storage device controller has for transmission and reception of data; a second communication port that the second storage device controller has for transmission and reception of data; and a communicating portion for carrying out bi-directional communication between the first communication port and the second communication port, and having a function for writing the data to be written to the first storage device also to the second storage device, to execute the steps of: utilizing the communicating portion, for communication in a direction for which the first communication

port and the second communication port are respectively set as the sender and the destination of data; and utilizing the communicating portion, for communication in a direction for which the second communication port and the first communication port are respectively set as the sender and the destination of data.

One of the benefits that may be derived is that a communication path is effectively used for carrying out remote copying and facilitating the recovery work of the remote copying.

B. Discussion of the References

It is submitted that the cited references, whether taken individually or in combination with each other, fail to teach or suggest the invention as claimed. In particular, the cited references, at a minimum, fail to teach or suggest in combination with the other limitations recited in the claims:

a first feature of the present invention as recited in independent claim 1, wherein an information processing system executing bi-directional communication comprises a first application program run on a first information processing apparatus sends data from a first communication port of a first information processing apparatus to a second communication port of a second information processing apparatus utilizing a communicating portion, and a second application program run on the second information processing apparatus sends data from the second communication port to the first communication port utilizing the communicating portion;

a second feature of the present invention as recited in independent claim 2, wherein a storage system executing bidirectional communication comprises a first application program run on a first information processing apparatus sends data from a first communication port of a first information processing apparatus to a second communication port of a second information processing apparatus utilizing a communicating portion, and a second application program run on the second information processing apparatus sends data from the second communication port to the first communication port utilizing the communicating portion;

a third feature of the present invention as recited in independent claim 5, wherein a first information processing apparatus is included as part of an information processing system executing bidirectional communication and having a communicating

portion, the first information processing apparatus comprising a utilizing portion for utilizing the communicating portion for communication by a first application program run on a first information processing apparatus to set a first communication port as a sender of data and a second communication port as a destination of data;

a fourth feature of the present invention as recited in independent claim 6, wherein a second information processing apparatus is included as part of an information processing system executing bidirectional communication and having a communicating portion, the second information processing apparatus comprising a utilizing portion for utilizing the communicating portion for communication by a second application program run on the second information processing apparatus to set a first communication port as a sender of data and a second communication port as a destination of data;

a fifth feature of the present invention as recited in independent claim 7, wherein a first storage device controller is included as part of a storage system executing bidirectional communication and having a communicating portion, the first storage device controller comprising a utilizing portion for utilizing the communicating portion for communication by a first application program run on a first information processing apparatus to set a first communication port as a sender of data and a second communication port as a destination of data;

a sixth feature of the present invention as recited in independent claim 10, wherein a second storage device controller is included as part of a storage system executing bidirectional communication and having a communicating portion, the second storage device controller comprising a utilizing portion for utilizing the communicating portion for communication by an application program run on the second storage device controller to set a first communication as a sender of data and a second communication port as a destination of data;

a seventh feature of the present invention as recited in independent claim 13, wherein a computer readable medium causes operations on an information processing system having a communicating portion, the medium contains a computer program software executing bi-directional communication executes the steps of utilizing the communication portion to send data from a first communication port of a first information processing apparatus to a second communication port of a second information processing apparatus, and

utilizing the communication portion to send data from the second communication port to the first communication port; and

an eighth feature of the present invention as recited in independent claim 14, wherein a computer readable medium causes operations on a storage system having a communicating portion, the medium contains a computer program software executing bi-directional communication executes the steps of utilizing the communication portion to send data from a first communication port of a first information processing apparatus to a second communication port of a second information processing apparatus, and utilizing the communication portion to send data from the second communication port to the first communication port.

To the extent applicable to the present Petition, Applicants submit that although the distinguishing feature(s) may represent a substantial portion of the claimed invention, the claimed invention including said feature(s) and their inter-operation provides a novel information processing system, storage system, storage device control apparatus and program.

1. U.S. Patent No. 3,795,901 to Boehm et al.

Boehm et al. relates to a data processing memory system with a bidirectional data bus. FIG. 1 illustrates a digital computer memory system having a memory unit 1, a bidirectional latch unit 2 connected by a bidirectional data bus 3 to a central processing unit 4. FIG. 2 illustrates memory unit 1 comprising a memory array 6, a set of bit drivers 7, a set of sense amplifiers 8, and a memory control 9. See generally col. 2, ln. 23-42.

As understood, the bidirectional data bus and bidirectional latch according to Boehm et al. relate to bit-by-bit communication between a single central processing unit and a single memory, and therefore do not relate to communication between plural units, such as plural information processing units or plural storage device controllers.

Thus, Boehm et al. does not set forth first and second information processing apparatuses as recited in claim 1.

Boehm et al. does not set forth first and second storage device controllers as recited in claim 2.

Boehm et al. does not set forth first and second information processing apparatuses as recited in claim 5.

Boehm et al. does not set forth first and second information processing apparatuses as recited in claim 6.

Boehm et al. does not set forth first and second storage device controllers as recited in claim 7.

Boehm et al. does not set forth first and second storage device controllers as recited in claim 10.

Boehm et al. does not set forth first and second information processing apparatuses as recited in claim 13.

Boehm et al. does not set forth first and second storage device controllers as recited in claim 14.

*More particularly, Boehm et al. does not teach or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 2, the above described third feature of the present invention as recited in independent claim 5, and the above described fourth feature of the present invention as recited in independent claim 6, the above described fifth feature of the present invention as recited in independent claim 7, the above described sixth feature of the present invention as recited in independent claim 10, the above described seventh feature of the present invention as recited in independent claim 13, and the above described eighth feature of the present invention as recited in independent claim 14.*

2. U.S. Patent No. 5,832,510 to Ito et al.

Ito et al. relates to an information processing system enabling access to different types of files, control method for the same and storage medium for storing programs to control the same. FIG. 1 illustrates a first client information processing device 110, a second client information processing device 140, a first server information processing device 120 and a second server information processing device 130. The respective information processing devices are connected to one another through a local area network (LAN) 101, and the communication can be performed among these information processing devices through each LAN controller 3. See generally col. 9, ln. 1-20. An operating system program (OS) 6a, a client program 7a for a file server program 9b, and an application program 8a are

loaded onto a memory 2a of the client information processing device 110 from a magnetic disk 5a when the client information processing device 110 is activated. Further, an operating system program (OS) 6d, a client program 7d for a file server program 9c and an application program 8d are loaded from a magnetic disk 5d into a memory 2d of the client information processing device 140 when the client information processing device 140 is activated. See col. 9, ln. 21-32. Gateway program 20 is stored in the first server information processing device 120 and the agent program 30 is stored in the second server information processing device 130. According to the gateway program 20 and the agent program 30 of this embodiment, in the system, a user can access the common files on the magnetic disk 5c using the same method as the access to the common files on the magnetic disk 5b. See col. 9, ln. 66 to col. 10, ln. 3.

The gateway program 20 includes a main routine 21 for, inter alia, performing automatic log-in for each user, and a file access hook routine 24 for hooking a file access request from the user and redirecting the access request from the user to the second server information processing device 130. See col. 10, ln. 4-20. A copy back routine 25 is provided for returning/rewriting into the second server information processing device 130 a file which is copied from the second server information processing device 130 onto the first server information processing device 120, and a directory synchronizing routine 26 for creating, on the first server information processing device 120, the same structure as an indicated part of the director structure on the second server information processing device 130. Id. Likewise, the agent program 30 includes a remote log-in service routine 31 for receiving a log-in demand from the user process routine 23, and then responds to the file access request from each user which is re-directed by the file access hook routine 24, and a directory synchronization service routine 33. See col. 10, ln. 22-33.

As understood, the hook routine 24 and the copy back routine 25 of Ito et al. provide for returning and rewriting of data into a second server processing device but do not permit bi-directional communication, nor does Ito et al. set forth first and second storage device controllers.

Thus, Ito et al. does not set forth an information processing system executing bi-directional communication comprising a second application program run on a second

information processing apparatus that sends data from a second communication port to a first communication port utilizing a communicating portion as recited in claim 1.

Ito et al. does not set forth first and second storage device controllers as recited in claim 2.

Ito et al. does not set forth an information processing system executing bi-directional communication comprising a first information processing apparatus comprising a utilizing portion for utilizing a communicating portion for communication by a first application program run on a first information processing apparatus to set a first communication port as a sender of data and a second communication port as a destination of data as recited in claim 5.

Ito et al. does not set forth an information processing system executing bi-directional communication comprising a second application program run on a second information processing apparatus that sends data from a second communication port to a first communication port utilizing a communicating portion as claimed in claim 6.

Ito et al. does not set forth first and second storage device controllers as recited in claim 7.

Ito et al. does not set forth first and second storage device controllers as recited in claim 10.

Ito et al. does not set forth a computer readable medium causing a system to execute bi-directional communication comprising a second application program run on a second information processing apparatus that sends data from a second communication port to a first communication port utilizing a communicating portion as recited in claim 13.

Ito et al. does not set forth first and second storage device controllers as recited in claim 14.

*More particularly, Ito et al. does not teach or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 2, the above described third feature of the present invention as recited in independent claim 5, and the above described fourth feature of the present invention as recited in independent claim 6, the above described fifth feature of the present invention as recited in independent claim 7, the above described sixth feature of the present invention as recited in independent claim 10, the above described*

*seventh feature of the present invention as recited in independent claim 13, and the above described eighth feature of the present invention as recited in independent claim 14.*

3. U.S. Patent No. 6,681,303 B1 to Watanabe et al.

Watanabe et al. relates to a storage system. In FIG. 1 one or more CPU's 120 and one or more storage systems 100 are arranged at a primary site where a main service is performed. CPU 120 executes an application program to issue a request for input/output of data of a logical volume 104 to the storage system 100 of the primary site. The logical volume 104 is logical storage devices which are recognized by the CPU 120. See col. 7, ln. 16-26. The storage system 100 is connected to a storage system 110 of a secondary site through one or more inter-controller paths 160. The storage system 100 is composed of one or more controllers 101 and one or more storage devices 103. The controller 101 performs the transfer of data between the CPU 120 and the storage device 103. In the controller 101, there are provided one or more processors for performing microprograms, a cache memory for temporarily storing data of the storage device 103, a memory for storing various tables. See col. 7, ln. 27-42. The CPU 120, the controller 101 and the storage device 103 communicate with each other through one or more host transfer paths 130 for connection between the CPU 120 and the controller 101 and one or more storage device transfer paths 102 for connection between the controller 101 and the storage device 103 to perform input/output. Id. FIG. 5 shows the flow of the write processing. See col. 14, ln. 54-65. When receiving a request for writing from the CPU 120 to the storage system (S) 100 (step 500), the controller (S) 101 writes the write data transferred from the CPU (S) 120 into the cache memory of the controller (S) 101 (step 501). Id. If the area accessed by the CPU (S) 120 is included in the area made the object of remote copying, the write data is transferred to the controller (T) 111 through the inter-controller path 160 on the basis of a predetermined protocol (step 503). See col. 15, ln. 13-33. An example of the predetermined protocol includes, a CKD protocol in the case of a main frame and a fiber channel protocol in the case of an open system. Id.

As understood, the mainframe CKD protocol frame and the open system fiber channel protocol of Watanabe et al. do not provide for bi-directional communication. The subject application uses, for instance, FC-SB-2 by which the layer configuration permits bi-directional communication.

Thus, Watanabe et al. does not set forth an information processing system including a communicating portion for executing bi-directional communication between a first communication port and a second communication port as recited in claim 1.

Watanabe et al. does not set forth a storage system including a communicating portion for executing bi-directional communication between a first communication port and a second communication port as recited in claim 2.

Watanabe et al. does not set forth a first information processing apparatus in an information processing system, wherein the information processing system includes a communicating portion for executing bi-directional communication between a first communication port and a second communication port as recited in claim 5.

Watanabe et al. does not set forth a second information processing apparatus in an information processing system, wherein the information processing system includes a communicating portion for executing bi-directional communication between a first communication port and a second communication port as recited in claim 6.

Watanabe et al. does not set forth a storage device controller in a storage system, wherein the storage system includes a communicating portion for executing bi-directional communication between a first communication port and a second communication port as recited in claim 7.

Watanabe et al. does not set forth a second storage device controller in a storage system, wherein the storage system includes a first storage device controller and a communicating portion for executing bi-directional communication between a first communication port and a second communication port as recited in claim 10.

Watanabe et al. does not set forth a computer readable medium containing a computer software for causing operations in an information processing system, wherein the information processing system includes a communicating portion for executing bi-directional communication between a first communication port and a second communication port as recited in claim 13.

Watanabe et al. does not set forth a computer readable medium containing a computer software for causing operations in a storage system, wherein the storage system includes a communicating portion for executing bi-directional communication between a first communication port and a second communication port as recited in claim 14.

*More particularly, Watanabe et al. does not teach or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 2, the above described third feature of the present invention as recited in independent claim 5, and the above described fourth feature of the present invention as recited in independent claim 6, the above described fifth feature of the present invention as recited in independent claim 7, the above described sixth feature of the present invention as recited in independent claim 10, the above described seventh feature of the present invention as recited in independent claim 13, and the above described eighth feature of the present invention as recited in independent claim 14.*

4. U.S. Patent Publication No. 2003/0033463 A1 to Garnett et al.

Garnett et al. relates to a computer system storage. FIG. 5 provides a perspective view of information processing cartridge 43. See section [0054]. Information processing cartridge 43 includes a microprocessor 192 mounted on an information processing cartridge motherboard 191. See section [0107]. Memory means for use by the processor 192 when executing instructions can be provided in the form of buffered dynamic random access memory (DRAM). See section [0108]. For IO to the midplane 171, two AC-coupled Ethernet interfaces 207 and 208 are provided in the present example, which are packaged in a 316 pin PBGA. See section [0111]0. These Ethernet interfaces can provide a PCI attached Ethernet MAC capable of operation up to Gigabit Ethernet performance. The physical layer can be implemented using SERialiser/DESerialisers (SERDESs) 209 and 210. Id. The SERDES devices use differential PECL TX+/- and RX+/- (Positive Emitter Coupled Logic Transmit and Receive) pairs to communicate to the switch portions of the CSSPs 71 over the midplane 171. The RX+/- pairs can be AC coupled at the information processing cartridge 43, the TX+/- pairs can be AC coupled at each CSSP 71. This facilitates hot-swap of the information processing cartridges 43 and the CSSPs 71. Asynchronous serial connections 211 and 212 for communication between the BSC 203 and the Service Processor parts of the CSSPs 71 can be provided. See section [0112]. Two switch ASICs (application specific integrated circuits) 244, 245 are provided (BCM5632 Gigabit switch ASICs). See section [0130]. Each ASIC can provide twelve GMII Interfaces (1 Gigabit Ethernet) (for uplinks and downlinks) and one 10 Gb XGMII interface for chip-to-chip communication (bridging) 246

between the ASICs 244 and 245. Sixteen GMII 1 Gb `downlinks`, in the form of serialized Gb Ethernet data, are provided through four quad SERDES 248-251 to allow each information processing cartridge 43 to communicate with the switch 73. Id. Eight GMII 1 Gb `uplinks` are provided for external communication through two quad PHYs 253 and 254 (BCM5404 ASICs) and RJ45 connectors on the rear panel 122. The ASICs 244 and 245 are configured via a PCI interface (32 bit/33 MHz) to the PCI bus 241. Id.

As understood, AC-coupled Ethernet interfaces and the GMII Interfaces of Garnett et al. do not provide for bi-directional communication. The subject application uses, for instance, FC-SB-2 by which the layer configuration permits bi-directional communication.

Thus, Garnett et al. does not set forth an information processing system including a communicating portion for executing bi-directional communication between a first communication port and a second communication port as recited in claim 1.

Garnett et al. does not set forth a storage system including a communicating portion for executing bi-directional communication between a first communication port and a second communication port as recited in claim 2.

Garnett et al. does not set forth a first information processing apparatus in an information processing system, wherein the information processing system includes a communicating portion for executing bi-directional communication between a first communication port and a second communication port as recited in claim 5.

Garnett et al. does not set forth a second information processing apparatus in an information processing system, wherein the information processing system includes a communicating portion for executing bi-directional communication between a first communication port and a second communication port as recited in claim 6.

Garnett et al. does not set forth a storage device controller in a storage system, wherein the storage system includes a communicating portion for executing bi-directional communication between a first communication port and a second communication port as recited in claim 7.

Garnett et al. does not set forth a second storage device controller in a storage system, wherein the storage system includes a first storage device controller and a

communicating portion for executing bi-directional communication between a first communication port and a second communication port as recited in claim 10.

Garnett et al. does not set forth a computer readable medium containing a computer software for causing operations in an information processing system, wherein the information processing system includes a communicating portion for executing bi-directional communication between a first communication port and a second communication port as recited in claim 13.

Garnett et al. does not set forth a computer readable medium containing a computer software for causing operations in a storage system, wherein the storage system includes a communicating portion for executing bi-directional communication between a first communication port and a second communication port as recited in claim 14.

*More particularly, Garnett et al. does not teach or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 2, the above described third feature of the present invention as recited in independent claim 5, and the above described fourth feature of the present invention as recited in independent claim 6, the above described fifth feature of the present invention as recited in independent claim 7, the above described sixth feature of the present invention as recited in independent claim 10, the above described seventh feature of the present invention as recited in independent claim 13, and the above described eighth feature of the present invention as recited in independent claim 14.*

5. U.S. Patent Publication No. 2003/0041207 A1 to Kamakura et al.

Kamakura et al. relates to an input/output controller, device identification method, and input/output control method. FIG. 1 is a block diagram showing a system 1 formed by connecting host computers 2-1 and 2-2 with storage systems 3-1 through 3-n by an interface 4. See section [0026]. The host computers 2-1 and 2-2 share the storage systems 3-1 through 3-n. Each of the storage systems 3-1 through 3-n is composed of a storage device 11 and a channel adapter 12 (input/output controller) in FIG. 1, but may include more than one storage device 11 and more than one channel adapter 12. See section [0027]. The storage device 11, which is composed of, for instance, a hard disk drive, stores data. The channel adapter 12 connects the storage device 11 to the interface 4. The interface 4 is a

fiber-channel interface, which is a high-speed serial interface identifying a device by its WWN. See section [0029]. FIG. 2 illustrates a connection part of the channel adapter 12 including a plurality of SCSI ports 22-1 through 22-m, a ROM 23, and a controller 24 are mounted on an interface board 21 of the storage device 11. See section [0031]. The port numbers are stored in the ROM 23 provided to the interface board 21, and are read from the ROM 23 by the controller 24. Id. The channel adapter 12 is connected to one of the SCSI ports 22-1 through 22-m. See section [0032]. The request is provided to the controller 24 of the interface board 21. The controller 24 reads out the port number corresponding to the SCSI port 22-i from the ROM 23, and supplies the port number to the channel adapter 12. Id. The MPU bus 36 connects the control logic parts 31 and 32, the MPU 34, and the memory 35. The data buffer 37 temporarily stores data supplied from the storage device 11 and the fiber-channel interface 4. See section [0039]. The fiber-channel processor 38 performs data conversion. The transmission and reception circuit 39 receives data from and transmits data to the fiber-channel interface 4. See section [0040].

As understood, the transmission and reception circuit of Kamakura et al. does not provide for bi-directional communication wherein sending and receiving ports may be set by first or second applications run on first or second information processing apparatuses. The subject application uses, for instance, FC-SB-2 by which the layer configuration permits bi-directional communication.

Thus, Kamakura et al. does not set forth an information processing system including a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 1.

Kamakura et al. does not set forth a storage system including a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 2.

Kamakura et al. does not set forth a first information processing apparatus in an information processing system, wherein the information processing system includes a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 5.

Kamakura et al. does not set forth a second information processing apparatus in an information processing system, wherein the information processing system includes a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 6.

Kamakura et al. does not set forth a storage device controller in a storage system, wherein the storage system includes a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 7.

Kamakura et al. does not set forth a second storage device controller in a storage system, wherein the storage system includes a first storage device controller and a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 10.

Kamakura et al. does not set forth a computer readable medium containing a computer software for causing operations in an information processing system, wherein the information processing system includes a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 13.

Kamakura et al. does not set forth a computer readable medium containing a computer software for causing operations in a storage system, wherein the storage system includes a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 14.

*More particularly, Kamakura et al. does not teach or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 2, the above described third feature of the present invention as recited in independent claim 5, and the above described fourth feature of the present invention as recited in independent claim 6, the above described fifth feature of the present invention as recited in independent claim 7, the above described sixth feature of the present invention as recited in independent claim 10, the above described seventh feature of the present invention as recited in independent claim 13, and the above described eighth feature of the present invention as recited in independent claim 14.*

6. U.S. Patent Publication No. 2003/0182526 A1 to Mikkelsen et al.

Mikkelsen et al. relates to remote data copy using a prospective suspend command. FIG. 1 illustrates a computer system in which computer HOST sends a variety of commands such as read and write commands to primary controller CNTL-1, which in turn controls the operation of one or more primary data recording devices DASD-1 to read and write information in response to the commands received from computer HOST. See section [0035]. A communication link conveys information between primary controller CNTL-1 and secondary controller CNTL-2 so that a remote copy of the information recorded on data recording devices DASD-1 can be recorded on one or more secondary data recording devices DASD-2 that are controlled by secondary controller CNTL-2. Id. While operating in "duplexing" mode, primary controller CNTL-1 sends information about the write command to secondary controller CNTL-2, which is used to make a corresponding update to information recorded on secondary data recording device DASD-2. See section [0050]. The UID uniquely identifies the location and content of the information to be written and the system time when the corresponding write command was issued by the host computer. Id. If the computer is part of a multi-processor complex, the time stamp is provided by a clock that is shared by all of the processors in the complex. Id. FIGS. 4A through 4D illustrate a system control method. Step S103 determines whether a command was received and, if so, whether the command is a "mode command" requesting a switch in operating modes or an "I/O command" requesting information be written to a data recording device. See section [0075]. Step S108 determines whether the primary controller is operating in simplexing mode. See section [0079]. If step S116 determines that the current operating mode is not simplexing, then the current operating mode must be either duplexing or pending. See section [0082].

As understood, the duplexing mode of Mikkelsen et al. does not provide for bi-directional communication wherein sending and receiving ports may be set by first or second applications run on first or second information processing apparatuses. The subject application uses, for instance, FC-SB-2 by which the layer configuration permits bi-directional communication.

Thus, Mikkelsen et al. does not set forth an information processing system including a communicating portion for executing bi-directional communication between a

settable first communication port and a settable second communication port as recited in claim 1.

Mikkelsen et al. does not set forth a storage system including a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 2.

Mikkelsen et al. does not set forth a first information processing apparatus in an information processing system, wherein the information processing system includes a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 5.

Mikkelsen et al. does not set forth a second information processing apparatus in an information processing system, wherein the information processing system includes a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 6.

Mikkelsen et al. does not set forth a storage device controller in a storage system, wherein the storage system includes a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 7.

Mikkelsen et al. does not set forth a second storage device controller in a storage system, wherein the storage system includes a first storage device controller and a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 10.

Mikkelsen et al. does not set forth a computer readable medium containing a computer software for causing operations in an information processing system, wherein the information processing system includes a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 13.

Mikkelsen et al. does not set forth a computer readable medium containing a computer software for causing operations in a storage system, wherein the storage system includes a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 14.

*More particularly, Mikkelsen et al. does not teach or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 2, the above described third feature of the present invention as recited in independent claim 5, and the above described fourth feature of the present invention as recited in independent claim 6, the above described fifth feature of the present invention as recited in independent claim 7, the above described sixth feature of the present invention as recited in independent claim 10, the above described seventh feature of the present invention as recited in independent claim 13, and the above described eighth feature of the present invention as recited in independent claim 14.*

7. U.S. Patent Publication No. 2004/0107246 A1 to Akashika et al.

Akashika et al. is not prior art in accordance with the priority document filed in the subject application on May 13, 2004. Akashika et al. is therefore not relevant, but is included herein to indicate to the Examiner that the reference was not overlooked.

8. Japanese Patent Publication No. 2001-306414 to Kobayashi et al.

Kobayashi et al. relates to a remote copying system for a storage device. The abstract of Kobayashi et al. indicates that copying is performed from a host computer connected to plural storage devices by way of fiber channel. During log-in, a storage device determines a remote side storage device and a port candidate by returning information for specifying a port capable of performing remote copying.

As understood, the remote side storage device of Kobayashi et al. does not provide for bi-directional communication wherein sending and receiving ports may be set by first or second applications run on first or second information processing apparatuses

Thus, Kobayashi et al. does not set forth an information processing system including a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 1.

Kobayashi et al. does not set forth a storage system including a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 2.

Kobayashi et al. does not set forth a first information processing apparatus in an information processing system, wherein the information processing system includes a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 5.

Kobayashi et al. does not set forth a second information processing apparatus in an information processing system, wherein the information processing system includes a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 6.

Kobayashi et al. does not set forth a storage device controller in a storage system, wherein the storage system includes a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 7.

Kobayashi et al. does not set forth a second storage device controller in a storage system, wherein the storage system includes a first storage device controller and a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 10.

Kobayashi et al. does not set forth a computer readable medium containing a computer software for causing operations in an information processing system, wherein the information processing system includes a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 13.

Kobayashi et al. does not set forth a computer readable medium containing a computer software for causing operations in a storage system, wherein the storage system includes a communicating portion for executing bi-directional communication between a settable first communication port and a settable second communication port as recited in claim 14.

*More particularly, Kobayashi et al. does not teach or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 2, the above described third feature of the present invention as recited in independent claim 5, and the above described fourth feature of the present invention as recited in independent claim 6, the above described fifth feature of the present invention as recited in independent claim 7, the*

*above described sixth feature of the present invention as recited in independent claim 10, the above described seventh feature of the present invention as recited in independent claim 13, and the above described eighth feature of the present invention as recited in independent claim 14.*

(f) In view of this petition, the Examiner is respectfully requested to issue a first Office Action at an early date.

Respectfully submitted,

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